



Version With Markings to Show Changes Made

RECEIVED  
JUN 06 2003  
TC 1700

IN THE SPECIFICATION

Please amend the present specification by the following:

Page 1

After the title insert the heading -- BACKGROUND OF THE INVENTION --;

After "BACKGROUND OF THE INVENTION", insert --"Field of the Invention  
--;

Line 4, delete the paragraph in its entirety and insert paragraph --[The invention relates to a method and an apparatus for the manufacture of a tube made of film on a cellulose basis, which reinforces an insert, by extruding an aqueous solution of cellulose-N-methyl-morpholin-N-oxide (NMMO) onto the insert.] The invention relates to a method and an apparatus for the manufacture of a tube made of film on a cellulose basis, which an insert reinforces, by extruding an aqueous solution of cellulose-N-methyl-morpholin-N-oxide (NMMO) onto the insert, which is drawn from a roll and formed to a tube with an overlapping longitudinal seam.--; and

Line 7, insert the heading --Description of Related Art--

Page 2

✓ After line 24, insert new paragraphs--Document GB-A 1,042,182 describes a method for the production of a film tube on a cellulose basis reinforced by an insert by extruding a cellulose-NMMO solution onto the insert, the insert being drawn from a roll. The insert is formed into a tube with an overlapping longitudinal seam, the seam not being cemented. This tube is treated inside and out with a viscose solution.

Document DE-A 1 952 464 describes an apparatus for coating and imbibing a paper tube with polyvinyl alcohol resin. The paper tube is formed from a paper web.

A cementing apparatus for cementing the overlapping longitudinal seam is not provided. Neither is any preheating of the paper web before it is coated with the polyvinyl alcohol resin performed.

In the document WO-A 95/07811 an apparatus is described for the production of tubes by extruding a cellulose-NMMO solution. The tubes are pure cellulose casings, but not so-called fiber casings in which a fiber insert strengthens the tube. The apparatus for the production of the tube is designed so that the tube can be cooled inside and out with air, so that the NMMO solution solidifies rapidly. The cooling air is by no means supporting air that is introduced into the interior of the film tube.--

Page 3

Line 18, insert heading --SUMMARY OF THE INVENTION--;

Line 19, delete paragraph in its entirety and insert paragraph – [The invention is therefore addressed to the problem of designing a method and an apparatus so that they are suitable for coating inserts formed into a tube with cellulose-NMMO solutions and permit a uniform penetration of the inserts with cellulose-NMMO solutions.] The invention is therefore addressed to the problem of designing a method and an apparatus so that they will be suitable for coating inserts formed into a tube with cellulose-NMMO solutions and permit a uniform penetration of the inserts with cellulose-NMMO solutions.--; and

Line 23, delete paragraph in its entirety and insert paragraph – [This problem is solved as regards process in that the insert is drawn from a supply roll, treated with emulsifiers, wetting agents and/or anchoring agents and formed into a tubular envelope with an overlapping longitudinal seam which is cemented ahead of a nozzle block through which the envelope is carried and in which the cellulose-NMMO solution is applied to the envelope and penetrates it in order to obtain an insert-reinforced film tube, that the interior of the film tube is filled with an aqueous NMMO solution, and that the film tube exits from the nozzle block and enters into a

spinning bath, turned about in the latter and carried out of it.] This problem is solved by the invention in that the tube passes through a heating section situated ahead of the nozzle block and in communication therewith, in which the insert is preheated with hot air to the temperature of the extruded cellulose-NMMO solution, then the seam is cemented with straight NMMO or cellulose-NMMO solution and the tube is then carried through the nozzle block in which the cellulose-NMMO solution is applied to the tube and penetrates it to obtain an insert-reinforced film tube, that the interior of the film tube is filled with an aqueous NMMO solution, and that the film tube exits the nozzle block and enters a spin bath, is turned around in the latter, and is carried out of it.--

Page 4

Line 4, insert heading --Detailed Description of a Preferred Embodiment--;

Line 5, delete paragraph in its entirety and insert paragraph – [In embodiment of the process, the tubular envelope passes through a heating section ahead of the nozzle block, in which it is preheated with hot air to the temperature of the extruded cellulose-NMMO solution. A controlled-pressure supporting air is blown into the interior of the film tube after it leaves the nozzle block.] In an embodiment of the process, after it is drawn from the roll, emulsifiers, wetting agents and/or anchoring agents are applied by one of the known methods such as roller application. An appropriately pressure-controlled supporting air is blown into the interior of the film tube after it leaves the nozzle block.--; and

Line 21, delete paragraph in its entirety and insert paragraph – [As a variant of this process it is also possible, instead of passing through a tub filled with the spin bath, to apply the spin bath directly internally and externally onto the film tube, through ring nozzles for example, as is described in EP-A 0 006 601. The spin bath level is then lowered inside and out to the top edge of the spin tube pulley.] As a variant of this process it is also possible, instead of passing through a tub filled with the spin bath, to apply the spin bath directly internally and externally onto the film tube, through ring

nozzles for example, as is described in EP-A 0 006 601. The spin bath level is then lowered inside and out to the top edge of the spin tub's deflector roll.--

Page 5

Line 4, delete paragraph in its entirety and insert paragraph – [The apparatus for the production of a film tube on a cellulose basis, which the insert reinforces, by extruding an aqueous cellulose-N-methyl-morpholin-N-oxide-(NMMO) solution onto the insert, with a nozzle block and a spin bath, is characterized in that a supply roll for the insert, a deflector roll with a device for applying additives to the insert carried from the supply roll over the deflector roll, a forming section in which the insert is shaped to a tubular envelope with overlapping longitudinal seam are present, that the tubular envelope passes through the nozzle block which is preceded by a cementing device for cementing the longitudinal seam of the tubular envelope and which contains a ring nozzle from the nozzle gap of which the cellulose-NMMO solution is extruded onto the tubular envelope to form a film tube, that between the exit from the nozzle block and the spin bath a temperature-controlled air section is present in a spin tub, that near the bottom of the spin tub a return roll for the film tube plunging vertically into the spin bath is disposed, and that a delivery and removal tube for aqueous NMMO solution as well as a duct for supporting air are situated in the interior of the film tube.] The apparatus for producing a film tube on a cellulose basis, which the insert reinforces, by extruding an aqueous cellulose-N-methyl-morpholin-N-oxide-(NMMO) solution onto the insert, with a nozzle block and a spin bath, is characterized in that a supply roll for the insert, a deflector roll, and a forming section in which the insert is formed into a tube with an overlapping longitudinal seam, are present, that a preheating system for the tube is disposed ahead of the nozzle block, that the preheating system is connected by hot air ducts and an exhaust duct is connected with a controllable heater out of which air heated in the circuit flows into the preheating system, and from which cooled air flows back into the heater, and that the tube runs through the nozzle block which is preceded by a cementing system for cementing the longitudinal seam of the tube and which contains a ring nozzle out of the nozzle gap of which the cellulose-NMMO solution

is applied to the tube preheated to the temperature of the extrusion solution in order to complete the formation of the film tube. In further embodiment of the apparatus, the insert is selected from the group, paper, nonwoven, fiber fleece, fiber paper, the fibers being especially long hemp fibers.--; and

Line 18, delete paragraph in its entirety and insert paragraphs – [In further embodiment of the invention the insert is selected from the group, paper, nonwoven, fiber mat and fiber paper, wherein the fibers are especially long hemp fibers. In addition, a system for preheating the tubular envelope is disposed ahead of the nozzle block and the preheating system is connected by hot air ducts and an exhaust line to a controllable heater out of which air heated in the circuit flows into the preheating system and from which cooled air flows back into the heater. It is also possible that the preheating system is not needed in every case, so that it remains shut off in certain production procedures. It is also conceivable that the apparatus according to the invention can be operated without any such preheating system.] In embodiment of the apparatus, after the insert is drawn from the supply roll an applicator system is attached, with which additives such as emulsifiers, wetting and/or anchoring agents can be applied to the insert and can be dried in the following hot open air section.

It is also possible that the preheating system is not required in every case, so that in certain manufacturing procedures it remains shut off.--

#### Page 6

Line 1, delete paragraph in its entirety and insert paragraph – [In an embodiment of the invention, the nozzle block contains a ring nozzle which is heated by a heating medium and the infeed and outfeed tube and the duct for the air supporting the film tube are brought centrally through an annular calibration disk which is arranged concentrically with the ring nozzle in the interior of the film tube and forms with the latter an annular gap through which the film tube passes.] In an embodiment of the invention, the nozzle block contains a ring nozzle which is heated by a heating medium, and a delivery tube and a removal tube for the aqueous NMMO solution,

plus a duct for supporting air for the film tube, are brought centrally through an annular gauging disk which is arranged concentrically with the ring nozzle in the interior of the film tube and forms with the latter an annular gap through which the film tube passes.--; and

Line 7, delete line in its entirety and insert --[The annular calibration disk is connected with the heating circuit for heating.] The annular gauging disk is connected with the heating circuit for heating.--

#### Page 7

Line 14, delete paragraph in its entirety and insert paragraph -- [The insert 3, which is paper, nonwoven, fiber paper or fiber fleece wherein the fibers are preferably hemp fibers, is drawn from the supply roll 2 and carried over the deflector roll 4. The fiber paper and the fiber fleece are solidified wet when manufactured, by being impregnated with dilute viscose, cellulose acetate solution or plastic washes. In these embodiments the insert 3 is used with preference. Ahead of the deflector roll 4 is an applicator 31 comprising a grid cylinder 32, a squeegee 33 and a pair of pinch rolls 34-35 for the application of additives, such as emulsifier, wetting agents or sticking agents, to the insert 3. After the insert 3 passes over the deflector roll 4 the formation of a tubular envelope 6 with an overlapping longitudinal seam 38 (see Fig. 4a) takes place in the shaping section 5 by means of a forming shoulder not shown.] The insert 3, which is paper, nonwoven, fiber paper or fiber fleece wherein the fibers are preferably hemp fibers, is drawn from the supply roll 2 and carried over the deflector roll 4. The fiber paper and the fiber fleece are solidified wet when manufactured, by being impregnated with dilute viscose, cellulose acetate solution or plastic washes. In these embodiments the insert 3 is used with preference. Ahead of the deflector roll 4 is an applicator 39 comprising a grid cylinder 40, a squeegee 33 and a pair of pinch rolls 34-35 for the application of additives, such as emulsifiers, wetting agents or sticking agents, to the insert 3. After the insert 3 passes over the deflector roll 4 the formation of a tube 6 with an overlapping longitudinal seam 38

(see Fig. 4a) takes place in the shaping section 5 by means of a forming shoulder not shown.--;

Line 25, delete paragraph in its entirety and insert paragraph -- [The tubular envelope 6 and the tube 10 which it forms is made by a vertically descending spinning. For this, the envelope 6 passes through the ring nozzle 21 in the nozzle block 7 through the gap of which the cellulose-NMMO solution is extruded onto the envelope 6 to complete the formation of the film tube 10. First the longitudinal seam on the envelope 6 is cemented ahead of the nozzle block 7 by a cementing system 25 shown more in detail in Figures 4a and 4b; straight NMMO or cellulose-NMMO solutions serve as the adhesive at temperatures between 15 and 110°C, especially the temperature of the cellulose-NMMO solution that is to be applied.] The tube 6 and the film tube 10 which it forms is made by a vertically descending spinning. For this, the tube 6 passes through the ring nozzle 21 in the nozzle block 7 through the gap of which the cellulose-NMMO solution is extruded onto the envelope 6 to complete the formation of the film tube 10. First the longitudinal seam on the envelope 6 is cemented ahead of the nozzle block 7 by a cementing system 25 shown more in detail in Figures 4a and 4b; straight NMMO or cellulose-NMMO solutions serve as the adhesive at temperatures between 15 and 110°C, especially the temperature of the cellulose-NMMO solution that is to be applied.--

IN THE CLAIMS:

Please amend the claims as follows:

1. (Amended) Method for the production of a film tube on a cellulose basis, which is strengthened by an insert, by extruding an aqueous cellulose-N-methyl-morpholine N-oxide (NMMO) solution onto the insert, which is drawn from a roll and formed into a tube with overlapping longitudinal seam, characterized in that [insert is drawn from a roll, treated with emulsifiers, wetting and/or anchoring agents and formed into tubular envelope with overlapping longitudinal seam which is cemented ahead of a nozzle block through which the envelope is brought and in which the cellulose-NMMO solution is applied to the envelope and penetrates the

latter, in order to obtain an insert-reinforced film tube, that the interior of the film tube is filled with an aqueous NMMO solution, and that the film tube exits from the nozzle block and enters into a spin bath, is turned about in the latter and brought out.] the tube passes through a heating section situated ahead of the nozzle block and communicating therewith, in which the insert is preheated with hot air to the temperature of the extruded cellulose-NMMO solution, and then the seam is cemented with pure NMMO or cellulose-NMMO solution, and the tube is then carried through the nozzle block in which the cellulose-NMMO solution is applied to the tube and penetrates it, in order to obtain an insert-reinforced film tube, that the interior of the film tube is filled with an aqueous NMMO solution, and that the film tube exits from the nozzle block and enters into a spin bath, is turned about in the latter and is carried out.

2. (Amended) Method according to claim 1, characterized in that [the tubular envelope passes through a heating section situated ahead of the nozzle block, in which it is preheated with hot air to the temperature of the extruded cellulose-NMMO solution.] emulsifiers, wetting agents and/or anchoring agents are applied by one of the known methods such as roller application.

13. (Amended) Apparatus for producing a film tube on a cellulose basis, which an insert [strengthens] reinforces, by [extrusion] extruding [of] an aqueous cellulose-N-methylmorpholin-N-oxide (NMMO) solution onto the insert, with a nozzle block (7) and a spin bath (11), characterized in that a supply roll (2) for the insert (3), a deflector roll (4), [ with a system for the application of additives onto the insert carried from the supply roll over the deflector roll, and a forming section (5)] in which the insert (3) is formed into a tube [tubular envelope] (6) with overlapping longitudinal seam are present, that a preheating system (15) for the tube (6) is disposed ahead of the nozzle block (7), that the preheating system (15) is connected by hot air ducts (22, 23) and an exhaust duct (24) to a controllable heater (17) from which air heated in the circuit flows into the preheating system (15) and from which cooled air flows back into the heater (17), and that the [tubular envelope] tube (6) passes through the nozzle block (7) which is preceded by [an adhering system] a



cementing system (25) for cementing the longitudinal seam [of the tubular envelope (6)] and which contains an annular nozzle (21) from whose nozzle gap the cellulose-NMMO solution is [extruded the tubular envelope] applied to the tube (6) [to form a film tube] preheated to the temperature of the extrusion solution for the formation of the film tube (10).], that between the exit from the nozzle block (7) and the spin bath (11) a controlled-temperature air section (9) is present in a spin tub (12), that near the bottom of the spin tub (12) a deflector roll (13) is disposed for the film tube plunging vertically into the spin bath, and that a delivery and removal tube (18, 19) is present in the interior of the film tube (19) for the aqueous NMMO solution, as well as a duct (20) for the supporting air.]

15. (Amended) Apparatus for the production of a film tube according to claim 13, characterized in that [a preheating system (15) for the tubular envelope (6) is disposed ahead of the nozzle block (7), and in that the preheating system (15) is connected via hot air duct (22, 23) and an exhaust duct (24) to a controllable heater (17) from which air heated in the circuit flows into the preheating system (15) and from which cooled air flows back into the heater (17)], after the drawing of the insert (3) from the supply roll (2) an applicator system (39) is provided by which additives, such as emulsifiers, wetting agents and/or anchoring means can be applied to the insert and dried in the following hot open air section.